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the hammer falls, a bird may fly across the field of vision; but the psychic result of the latter bears no educative relation to those derived from the hammer.

In nature study, the landscape, embodying the entire field of observation, presents itself to the beginner as a great composite of confused parts, and to most people, perhaps, it always remains so. It should be the aim of instruction to assist the pupil to refer the separate and more or less confused mental impressions to the appropriate source, and as this is done, to organize those referred to the same source into a clear and definite image. The landscape is revealed to the observer through its color, the initial interest being roused through the æsthetic sense. Everything, therefore, which involves color can be referred to a common external source, namely, light. All color impressions consequently become organized in the mind, since they are related to a common cause. Whether it is the foliage of a tree or the decorative colors of a room, the questions arising in both are solved by this relation to the one thing, light. Still further, in plants many of the myriad varieties in form are nothing but inextricable confusion until their relationship to light is recognized; then the seeming confusion of forms becomes an orderly array. Even two structures so extreme in their unlike-

ness to each other as a leaf and the human eye become related, from the fact that each represents a concession of the organism to the same controlling cause found in light. A large number of landscape phenomena, therefore, may be grouped together, from which there will be formed an image of related parts representing the effects of light. Another group of phenomena will be referred in the same way to heat, another to moisture, another to soil, and so on. The channeling of the grassblade and the bladderly vesicles on submerged plants as isolated facts are of little importance. But when the one is recognized as a dew-spout and the other as a swim-bladder, and that both are an attempt to make friends with water, they become the organized parts of an image that is fundamental in the study of botany. Imaging thus begun opens the way to endless study. Simple enough in the outset to be clear to the child, the last step in scientific research is but the latest attempt of the trained mind to define more clearly the same image. Nature study is not only the amassing of facts, it is also the organization of facts; science itself is nothing more. This kind of image growth is continuous. The demand for details for an ever incompleting image impels that research which always marks the true student of nature.

Function of Expression in Education

Francis W. Parker

SYLLABUS FOR FACULTY DISCUSSION

I. The best expression requires the best thought. The best thought causes the best growth of the nerve centers. Expression is controlled by motive; the higher the motive the greater the demand for expression and thought power.

1. The phrases, "the best expression," "the best thought," may seem vague and indeterminate, but certainly every teacher should demand of pupils and should direct all teaching skill to bring about nothing less than that. It is perfectly safe to say that all the movement in the development

of the child's mind should be in the best possible direction—that is, in the most economical direction.

a. The best expression is that which is clearest, most legible, and most intelligible to the minds of those addressed.

b. It comes the nearest to the realization of its end and aim.

c. The best, most complete action of body, mind, and soul is the most economical movement in realizing an ideal.

2. The best expression demands the clearest, most distinct, most concise thought.

a. Carelessness in expression is generally due to carelessness in thought.

b. The form of expression may have many imperfections, and still if it is commensurate with the ability of the child it may be called the best.

II. The highest exercise of the body, the development of the brain by self-activity, the growth of thought power, and the cultivation of motive depend upon expression in all its modes.

1. The proof of this fact, of such tremendous importance in education, is found in the law of "motor discharge" (Dewey); in "dynamo genesis" (Baldwin); in "man a reactive animal" (James).

a. Sensations are held in nerve centers *for growth* by automatic discharge.

b. Holding a sensation or group of sensations is accomplished by motor discharge.

c. When an image becomes strong enough for conscious discharge through the agents of expression (voice, hand, body), the will controls and directs the movements.

d. Holding an image causes that image to grow by expansion and concentration.

NOTE: Images form the essential mental basis of analysis, judgment, inference, reason, laws of causation, and abstraction.

There is an unconscious, or automatic, tendency of all thought to manifest itself. All sensations, under the law of motor discharge, react or move out through the

efferent nerve tracts. The result of this partial motor discharge is an emotion which accompanies all study without realizing the thought in expression. When thought is expressed by any of the modes, self-criticism often becomes painful by the recognition of the fact that the expression is inadequate to the thought.

III. Attention is the holding of images for growth by the aid and stimulus of external objects. If held, images must grow. When they cease to grow it is impossible to hold them.

1. There are three modes of attention:

a. Observation—the direct action of an object upon consciousness for the purpose of acquiring an image corresponding to the object.

b. Hearing language—imaging under the stimulus of oral sentences, reinforced by emphasis, including harmony and gesture.

c. Reading (in all languages)—imaging under the stimulus of printed sentences.

To this list may be added reflection, which is imaging without the direct action or stimulus of external objects.

NOTE: Observation of pictures, maps, sculpture, may be counted as a mode of attention. The picture contains certain related attributes of the object represented.

IV. Modes of expression. Through the vocal organs—voice, speech, vocal music. Through the whole body—gesture. Through the hand—making, modeling, painting, drawing, and writing.

1. Attention demands expression:

a. For the steady holding of images.

b. For self-criticism in the realization of images. (In no other way can the need of clearness, distinctness, and relation be made apparent to the student.)

2. Memory demands expression. (Strong related images are the basis of recollection.)

V. Subjects for mind nutrition or growth.

Explanation: In the mere forms of attention and expression there is no substantial image growth. There is a vast difference between the means of growth and the growth itself.

1. Nutritious subjects are comprehended in Nature and Man. The study of Geography (or Physiography) is the imaging of the earth's surface. Geology is the history of the earth's surface. Mineralogy is the composition of the earth's crust. Meteorology is the study of heat, its source, cause, distribution; the study of air and its distribution by winds; the study of moisture and its distribution.

2. The function of moisture (water) and air in changing the earth's surface.

a. The function of moisture in relation to living organisms—plants, animals, man.

3. Plant life (Botany), its relations to Geography, Geology, Mineralogy, and Meteorology.

a. The function of plant life in relation to animals and man.

4. Zoölogy (animal life) and its relations to plant life, to its environments.

a. Its function in the support of man's life.

5. Man.

a. Environment: Geography, Geology, Mineralogy, Meteorology, Botany, and Zoölogy.

b. Anthropology: Anatomy, Physiology, Evolution, Psychology, Ethnology (sociology); influence of society upon man.

6. Archæology: the ancient work—arts and crafts of man—buildings, tools, implements, etc.

7. Philology.

a. The languages in relation to the thought and evolution of man.

b. Written history the record of man's life.

c. All changes in organic matter are

under the laws of Physics and Chemistry. All study may be called study of change. There are the changes physical and chemical, and the changes in life under laws that have not been discovered. Thus there can be no understanding of organic or inorganic matter without the study of Physics and Chemistry.

NOTE.—It will be seen that all these subjects are really *one*. It is impossible to understand one subject without the other subjects. The growth of images corresponding to objects, subjects in Nature and Man, is fundamental and essential knowledge.

The strength of all images consists in their accurate correspondence and relations. Strong memory means strong related images.

Questions for Discussion

If the foregoing is reasonably true, then the following questions may be discussed:

1. Is expression absolutely essential to the growth of mind, body, and soul?

2. Has each mode of expression a definite, reactive, educative function for which no other mode or all the modes can be substituted?

3. In the use of all modes of expression is there a definite relation to the growth of the being?

4. What is the function of each mode of expression?

5. Should each mode and all the modes of expression be used continuously in teaching?

6. If one mode is omitted, will there be a lack of education?

7. How are teachers to determine the modes of expression to be used in given cases?

8. Is it true that all teaching should have for a purpose the growth of an image or apperceptive mass?

NOTE.—A common and fatal error in teaching is the fancy that students have certain images when they do not have them. Images in children, and indeed in most persons, are vague and anything but strong. The teachers fancy that children have the thoughts that they (the teachers) have, and therefore vainly strive to accomplish the impossible.